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(54) Title: USE OF PP2A PHOSPHATASE MODULATORS IN THE TREATMENT OF MENTAL DISORDERS

(57) Abstract: The invention relates to the use of PP2A/B γ and to the use of a PP2A phosphatase comprising the PP2A/B γ subunit for screening for modulators thereof. The use of these modulators for treating mental disorders such as bipolar disorder, schizophrenia and depression, and drugs comprising these modulators are further disclosed. The invention also discloses biallelic markers located in the gene encoding PP2A/B γ and their use for diagnosing mental disorders.

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12Q1/68	A61K45/00	A61K39/395	A61K48/00	G01N33/50
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BIOSIS, EMBASE, CHEM ABS Data, SEQUENCE SEARCH

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	ZOLNIEROWICZ STANISLAW ET AL: "Diversity in the regulatory B-subunits of protein phosphatase 2A: Identification of a novel isoform highly expressed in brain" BIOCHEMISTRY, vol. 33, no. 39, 1994, pages 11858-11867, XP001180134	12
Y	ISSN: 0006-2960 page 11860, right-hand column, paragraph 3 -page 11861, left-hand column, paragraph 1 figure 6 ---	1-5 -/-

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

Special categories of cited documents:	<ul style="list-style-type: none"> *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed
T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	

Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl. Fax: (+31-70) 340-3016	Authorized officer Böhmerova, E

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	HU PEIRONG ET AL: "Molecular cloning and mapping of the brain-abundant B1gamma subunit of protein phosphatase 2A, PPP2R2C, to human chromosome 4p16" GENOMICS, vol. 67, no. 1, 1 July 2000 (2000-07-01), pages 83-86, XP004260490 ISSN: 0888-7543 abstract; figure 1 ----	12
Y	US 5 856 506 A (LAZO JOHN S ET AL) 5 January 1999 (1999-01-05) column 8, line 4 - line 23 ----	1-5
A	HE J ET AL: "Spatial memory deficit and neurodegeneration induced by the direct injection of okadaic acid into the hippocampus in rats" JOURNAL OF NEURAL TRANSMISSION, vol. 108, no. 12, December 2001 (2001-12), pages 1435-1443, XP001188133 ISSN: 0300-9564 the whole document ----	1-42
A	HOLMES S E ET AL: "A NOVEL CAG TRINUCLEOTIDE REPEAT EXPANSION ADIACENT TO A GENE ENCODING A SUBUNIT OF PROTEIN PHOSPHATASE 2A IS ASSOCIATED WITH A PROGRESSIVE NEUROLOGICAL DISORDER" SOCIETY FOR NEUROSCIENCE ABSTRACTS, SOCIETY FOR NEUROSCIENCE, US, vol. 25, 1999, page 1096 XP000943321 ISSN: 0190-5295 abstract ----	1-42
A	GONG C X ET AL: "Inhibition of protein phosphatase-2B (calcineurin) activity towards Alzheimer abnormally phosphorylated tau by neuroleptics" BRAIN RESEARCH, AMSTERDAM, NL, vol. 741, 25 November 1996 (1996-11-25), pages 95-102, XP002096365 ISSN: 0006-8993 abstract -----	1-42

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5856506	A 05-01-1999	US 5700821 A	23-12-1997
		AU 715546 B2	03-02-2000
		AU 3820597 A	20-02-1998
		CA 2261793 A1	05-02-1998
		EP 0959884 A1	01-12-1999
		JP 3268782 B2	25-03-2002
		JP 2000515165 T	14-11-2000
		WO 9804257 A1	05-02-1998
		US 5925660 A	20-07-1999
		US 6040323 A	21-03-2000